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ABSTRACT

A research project sponsored by Wofford College was launched in the summer of 1974 in Spartanburg, South Carolina, to develop a system of communication by which hospital personnel working in an emergency room could communicate with patients who speak a language other than English. The project followed a year-long research effort of previous work done in this area of language and medicine, and reflects the discovery of the idea of using cartoons and phonetics together as a means of facilitating communication. The results attained surpassed the expectations. In every instance the doctors using the system understood the responses given to them and it was determined the 95 per cent of the patients understood the questions when spoken by the health care personnel. Thus, the system should play an invaluable role to quick medical treatment in emergency situations when a language barrier exists between the health care personnel and their patients and a translator is not immediately available. (Author)

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# IN SEARCH OF A SYSTEM FOR COMMUNICATION

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NATURE OF PROBLEM. In order to isolate conditions of suffering there is a need to provide rapid communications between hospital patients and hospital personnel. While there is no difficulty in this communication among English-speaking persons in this country, there does exist an obvious problem for non-English-speaking citizens. It was in November of 1972 when I became acutely aware of this. My mother, born to Spanish parents in Cuba, underwent surgery for removal of a tumor on her right ear in a Miami, Florida, hospital. The operation was declared a success by the doctors. She was relaxing comfortably in her room when late that night she experienced severe chest pains, but despite her efforts could not communicate this discomfort to the attending nurses. It was not until the next morning that the attending physician discovered that she had suffered a heart attack. My mother's five-day visit to the hospital became a twenty-five-day stay with her survival questionable during much of that period.

This situation must be frequent in occurrence in a country where large numbers of persons from different ethnic groups do not speak English. Moreover, refugees immigrants, and seasonal workers arrive in America without any mastery of the English

language. In addition, hospitals with a bilingual staff for a specific foreign language are subject to communication problems too. For example, such problems occur when a hospital has a Spanish-English bilingual staff and there is a French-speaking emergency case.

Firmly convinced that a usable communication system in doctor-patient and nurse-patient relationships can save time, expense, and perhaps lives, I began considering solutions to the problems of language barriers between patients and their doctors and nurses.

The city of Spartanburg offered a unique opportunity for such a study because its population includes representatives from Germany, Switzerland, Colombia, Cuba, China, and other nations. In addition, each June and July several hundred Spanish-speaking migrant workers come to the Spartanburg area to work in the peach orchards. As the final factor, the administration and staff of Spartanburg General Hospital agreed to help my endeavors.

FIRST STEPS. During the eighteen-month period since the original idea of doing something to help communication in hospitals (and in health-care situations in general), information was sought with HEW officials to determine what was in print on the subject. I learned that HEW had nothing available in their coded issuances which dealt with methods of expediting communication between hospital personnel and foreigners.

A handful of articles geared toward the problem of understanding foreigners was found while researching the Cumulated Index Medicus and the Eric Documents, but only one of those articles, "Communication with Non-English Speaking Patients," presents the

material translated to several foreign languages. In addition, a number of textbooks written for the purpose of teaching a foreign language to nurses and/or doctors were obtained. Even though the goal was not to develop a new teaching method or a new approach to teaching a foreign language, I was eager to find out what was being used and to learn of the new developments in the area of specialized foreign language courses. Nothing found (articles or books) resembles the approach in communication or projects itself toward the goals set for this research.

FOUNDATIONS AND LIMITATIONS. The following premises established the point of departure:

A. Communication is a mutual effort, in which both the patient and the doctor are and must be involved. The patient should be able to understand the doctor's questions and the doctor should be able to understand the patient's answers.

B. It is unrealistic to think that most hospitals can staff multilingual personnel when even bilingual persons are hard to find.

C. Although health care can be administered to persons without an exchange of words, a little information at the right time can save time, money, and most importantly lives. Communication also gives confidence to both patient and doctor.

D. Even hospitals located in areas heavily populated by specific ethnic groups, whether or not isolated from tourism or international business, should be ready to communicate in at least the five major non-English languages--

Chinese, French, German, Russian and Spanish.

E. Only something we can use with our permanent knowledge will be practical and available for use at any given time.

F. Although health care includes a large number of different situations (emergency room, intensive care unit, laboratory, physical therapy, etc.) for which varying communicative patterns are needed, the limited duration (three months) of this study required a priority focus. I chose the emergency room.

G. The testing was conducted in Spanish in order to take advantage of the opportunity offered by the presence of several hundred Spanish-speaking migrant workers in the Spartanburg area.

THE QUESTIONNAIRE. A tentative questionnaire was distributed among doctors in the Spartanburg General Hospital. The purpose of that questionnaire was to stimulate the physicians' thinking by suggesting different conditions, and was not intended to include all possible dialogues. A Spanish version was mailed to two Spanish-speaking doctors. The responses received were tabulated and those questions which at least one doctor suggested as necessary were included in the final questionnaire. An effort was made not to reject any doctor's recommendation as long as the total number of questions could be kept acceptably low. In the preparation of the Spanish version for testing, the approval of the vocabulary used was given by Spanish-speaking doctors. An effort was made to use only spoken Spanish easy to understand by all Spanish-speaking natives. As all who have studied the Spanish language at length know, however, this is not an easy task, especially when the possible participation of illiterates

from a score of nations is considered.

In trying to simplify the speech patterns, precise use of language was sacrificed to some extent. The occasional absence of articles can be noted, for instance. Also, agreement in gender and number between noun and adjective sometimes has not been followed. In such cases, precise expression was considered secondary to the necessity for rapid communication and the avoidance of confusion on the part of the doctors. Once a suitable, inclusive questionnaire was formed, the next step was the preparation of the phonetic pronunciations for the questions and expressions used. It is important that all questions were framed in such a way that they could be answered with either "Yes," "No," "Somewhat," "I don't know," or "Nothing." Those answers can be understood by doctors without much difficulty, particularly since their phonetical pronunciations and English translations would be supplied.

DEVELOPMENT OF CARTOONS. It is a rather easy task in general to have cartoons illustrating certain physical conditions and symptoms, but for a few of them it is somewhat difficult without appearing offensive to some or a series of cartoons. Neither alternative was attractive, but I settled for using two-part cartoons when necessary. The same characters were used throughout the questionnaire in order to facilitate understanding when a doctor wishes to ask five or more questions to a patient. Simple, easy-to-understand sketches were developed, with no adornments or details that could distract attention or lead the viewer toward the wrong idea. In certain instances a decision not to use cartoons was made in order to keep the number of pages reasonably low. An example of that policy is the question in the Medical History section which

asks, "Have you had.....?" and is followed by a list of eighteen diseases. Cartoons for most, if not all, of the diseases could have been obtained, but such a move would practically force the use of sixteen additional pages and the tediousness of going through them, and would not necessarily have made for any easier comprehension on the part of the patient than simply a two-page list of the diseases would.

TESTING THE MATERIALS. With the set of cartoons ready, a two-hundred-sample validity effort was launched in an effort to determine if cartoons can be used to convey the ideas of questions asked by a doctor to his patient. Using occupation as a guideline to select a representative cross-sectional group from society, the following subject groups were included: janitors, migrant workers, factory workers, policemen, firemen, high school and college students, housewives, teachers, engineers and other professionals, jail prisoners, emergency room patients, secretaries, retirees, etc. (See Figure 1.)

FIGURE 1 OCCUPATION

Students (h.s. and college) ....23%
White collar workers .....20%
Blue collar workers .....41%
Professionals .....11%
Housewives ..... 5%

Although the majority of the participants were Americans, people of the following nationalities also participated: Cuban, Bulgarian, French, German, Mexican, Puerto Rican, Russian, Spanish, Swiss, Ugandan, etc. (See Figure 2.)

FIGURE 2 NATIONALITY

Latin Americans .....17%
Europeans ..... 8%
Asians ..... 3%
Americans (U. S.) .....72%

Figures 3, 4, 5, and 6 indicate the representative nature of the participant group in terms of age, education, race, and sex.

FIGURE 3 AGE

15 - 29 .....45%
30 - 44 .....32%
45 - 59 .....18%
60 and over ..... 5%

FIGURE 4 EDUCATION

None ..... 5%
Elementary .....13%
High School.....44%
Undergraduate.....26%
Graduate .....12%

FIGURE 5 RACE

Blacks .....13%
Whites .....85%
Yellow..... 2%

FIGURE 6 SEX

Masculine .....71%
Feminine .....29%

PROCEDURE. The following procedure was observed whenever the test was administered.

A. The paragraph below was read aloud prior to the beginning of a test.

> "You are going to see a series of cartoons. Each cartoon portrays a question a medical doctor is asking his patient in the emergency room.
> Please write whatever question you think the cartoon illustrates in the appropriate line. The wording you use is not relevant. You can express what you see in the cartoons in the way you want. Use only one line per cartoon. There might be one or more cartoons portraying the same questions."

B. If questions were raised they were answered without giving any clues. Stress was given to the facts that no particular importance was placed on sentence construction, that a person could not "fail" or "pass" the test, and that only the cartoons were being tested. Participants were asked to fill in all the lines even by writing "I don't know" if that was the situation.

C. The cartoons were shown using transparencies in an overhead projector. No specific length of time was set for the showing, but in all cases the length of time ranged from 20 to 35 minutes.

D. In the case of illiterates, a person sat next to them and wrote whatever they said. This procedure was arranged on a one-on-one basis to avoid choral or imitation responses. Instead of an overhead projector we used a binder containing the cartoons with this group.

The test was conducted in the following locations: Sulzer Bros., Inc.; Andrews Bearing Company; Menzel, Inc.; Spartanburg City Police Department; Spartanburg City Fire Department; Spartanburg City Jail; South Carolina Highway Patrol; Spartanburg General Hospital; Sunny Slope Peach Farms; Mountain View Methodist Church; Wofford College, and eight private homes.

At the end of the sampling five cartoons were replaced or dropped entirely. Of most significance, however, is the fact that results of the testing indicated that the basic approach was in the right direction. The cartoon-representations worked: On the first try 89% of the cartoons communicated the desired idea to at least 65% of the persons. Those figures indicate that I could use more cartoons and expect to achieve

through them a conservative 80% accuracy with 65% of the people.

In the case of persons 60 years old and over, the results were less satisfactory. Only 12% of the cartoons were clearly understood by 60% or more of the people of that age. If the fact that generally hearing capability has been reduced by age is taken into consideration, phonetics cannot supply the necessary input to establish the desired communication in this particular age group.

People from Europe, Asia, and Latin America saw in the cartoons the same ideas Americans found in them. The validity testing supplied no evidence to support a move toward preparing different sets of sketches for different nationalities. Seventy percent of the Europeans and 60% of the Latin Americans clearly understood 66% or more of the cartoons. It is necessary to mention that half of the Latin Americans tested were illiterate migrant workers. Education plays an important part in the process of communication, as could be expected. Persons with high school and/or college degrees achieved higher percentages of recognition than persons with elementary education or no education at all. In addition, if a person knows how to read his native language, cartoons are not necessary and little use of phonetics is needed. The daily activities of an individual reflect heavily on his ability to communicate through cartoons. Taking as an example a group of 15 patrolmen, of whom 85% had only a high school diploma, 80% of them clearly understood 90% of the cartoons. This group ranks higher than college students.

THE COMPLETE SYSTEM. At this stage the ground was ready to prepare the Spanish-English volume to be tested with Spanish-speaking migrant workers. After the Spanish-language question was printed on the top of each page, the phonetic pronunciation of

the Spanish was added immediately below, followed by the cartoon, the two or three possible answers, and the English translation at the bottom of the page.

The idea of printing the Spanish version at the top was followed because if the patient knows how to read Spanish, he should be allowed to do so and respond to the question in a loud voice. The possible answers were printed in different colors. (See Figure 7.)

FIGURE 7 COLOR KEY

Yes .....Green
No .....Red
Somewhat .....Brown
I don't know.....Blue
Nothing .....Black

The colors were employed because by using them, by pointing to the various colors, the doctors can assure themselves of answers received and the color key will be extremely helpful when dealing with various foreign languages. Red was used for the "No" responses because red is the color meaning "Stop" internationally, just as green stands for "Yes" or approval. Blue, brown, and black were selected for contrast. English translations at the bottom of each page for all Spanish material used on the page was added as an extra precaution against possible mistakes. (See sample next page.)

From the beginning the task was to provide enough means of communication so 95% success in communicating properly in the emergency room could become a reality. This was achieved through the combination of reading, auditory, and visual means. If the person knows how to read the foreign language there will be no problem. In the case of illiterates, the cartoons alone provide over 65% success in communication

# ¿HA VOMITADO?

AH VO-ME-TAH'-DO

SI
SEE

NO
NO

*Have you vomited?

and phonetics the remaining 30%. Sign language should contribute when necessary or helpful. Of course, the key to the success was in selecting and limiting the questions in such a way that each could be answered by one of only five possible and simple answers, of which two (yes, no) are the most used.

RETESTING THE SYSTEM. During the period from July 3 to August 3 a Spanish-English volume was placed in the emergency room of Spartanburg General Hospital for the doctor's use with Spanish-speaking patients who were unable to communicate in English. Also, in order to do more testing, the visit during that time of a medical doctor to Boiling Springs Baptist Church was arranged. There, Spanish-speaking migrant workers gather on Thursday evenings for social and entertainment activities. James Donald Grist, M. D., twice attended those meetings using the questionnaire at random with the migrants. Moreover, the South Carolina Human Resources Commission helped one evening with a doctor and two externs visiting sick migrant workers and their families.

RESULTS. During that month-long period of testing, results attained surpassed the expectations. A total of 215 questions were asked and only 10 times was the question not understood. (See Figure 8.)

FIGURE 8 PROFICIENCY

TOTAL NUMBER OF QUESTIONS ASKED 215

| | |
|---|---|
| The question was understood | 95.1 % |
| The answer was understood | 100. % |
| The same question was asked twice | 0.60% |
| Sign language was also used | 1.17% |

In every instance the doctors understood the responses given to them. This is highly significant because it represents the success achieved in breaking the communication gap. The fact that in not a single instance did the doctors have trouble understanding means that the narrowing of the questions used to those asking for simple responses is an element to be retained. Only 13 times did the doctors have to repeat a question being asked. No significant role of sex, age, or Spanish nationality could be established. However, it should be stated that only Puerto Ricans and Mexicans participated in the testing, and that all were under 60 years of age. (See Figures 9 and 10.)
In addition, differences in the usefulness of questions with cartoons and questions without cartoons were not established since no comments were received in this direction.

FIGURE 9 SEX

TOTAL NUMBER OF QUESTIONS ASKED 215

Female participation .....29%
Male participation .....71%
Percentage of questions asked to females .....25%
Percentage of questions asked to males .....75%

FIGURE 10 AGE

TOTAL NUMBER OF QUESTIONS ASKED 215

(A) PARTICIPATION

Group (1) 14 - 26 ..... 70%
Group (2) 27 - 39 ..... 22%
Group (3) 40 - 59 ..... 8%

(B) PERCENTAGE OF QUESTIONS ASKED TO EACH AGE GROUP

Group (1) 14 - 26 ..... 72%
Group (2) 27 - 39 ..... 22%
Group (3) 40 - 59 ..... 6%

ANALYSIS. The preceding research results indicated that it was possible to develop an emergency room system of communication. With material having been developed and tested for use with Spanish-speaking people work on translating and adapting them to French and German is under way. Translation into any other foreign language should present no difficulty at all. Moreover, reversing the patterns for the benefit of English-speaking persons abroad is not a difficult task. In addition, it is possible to develop a complete system of communication for all areas of health care, a system which will enable the personnel of hospitals, clinics, and doctor's offices to obtain basic information and to express necessary instructions when dealing with patients who speak a language other than English.

The necessity of a system like this one is significant as the list of the advantages below points out.

A. Personnel in the health care field need not learn anything, nor is there a need for special training and/or background.

B. It has world-wide potential.

C. It is easily adaptable to any foreign language and/or dialect.

D. Many doctors would like to have such a book available in their offices.

E. Since most hospitals have an actual use for it, keeping the book available at all times in various departments will be advantageous for them.

F. It uses a new and more useful approach to communication in the health care of patients.

G. The material is based on considerable research, and has been adequately tested.

H. The functional degree of this system is very satisfactory.

I. The use of foreign personnel, translators, special courses and/or training, sign language, or any other means to facilitate communication is not ruled out, but encouraged.

There are certain difficulties still to be resolved. It would be beneficial, for example, to include a number of questions asking for answers other than the five simple responses used in the discussed research; questions asking for time and/or amounts could be included if presented in such a way that responses can be limited and therefore understood by doctors without difficulty. On the other hand, questions asking for detailed explanations, accounts of events, histories of diseases, symptoms which are difficult to define, and so on, pose the problem of requiring an unlimited number of possible answers from which to choose. Questions of that type which can be grouped in a follow-up questionnaire present a challenge. Perhaps in a long-term study a solution can be found so medical personnel could deal with this material too.